

TOLUBINSKIY, V.I., doktor tekhn.nauk, prof.; LEGKIY, V.M., kand.tekhn.nauk

Thermal and aerodynamic characteristics of two types of heating  
surfaces of regenerative air heaters. Energomashinostroenie 9  
no.8:40-42 Ag '63. (MIRA 16:8)

(Boilers)

TOLUBINSKIY, V.I., otv. red.; FEDOSEYEV, V.A., doktor fiz.-mat. nauk, zam. otv. red.; DORFMAN, A.Sh., kand. tekhn. nauk, red.; DUSHCHENKO, V.P., kand. fiz.-mat. nauk, red.; DYBAN, Ye.P., kand. tekhn. nauk, red.; KREMNEV, O.A., doktor tekhn. nauk, red.; NAZARCHUK, M.M., kand. tekhn. nauk, red.; ORNATSKIY, A.P., kand. tekhn. nauk, red.; PAVLOVICH, V.P., doktor tekhn. nauk, red.; SHVETS, I.T., kand. tekhn. nauk, red.; SHCHEGOLEV, G.M., kand. tekhn. nauk, red.; SHCHERBAN', A.N., akademik, red.; SYTNIK, N.K., red.

[Thermophysics and heat engineering] Teplofizika i teplo-tehnika. Kiev, Naukova dumka, 1964. 339 p.

(MIRA 18:1)

1. Akademiya nauk URSR, Kiev. Instytut tekhnichnoy teplofizyky.
2. Institut tekhnicheskoy teplofiziki AN Ukr.SSR, Kiev (for Dorfman, Dyban, Nazarchuk, Tolubinskiy, Shchegolev).
3. Kiyevskiy tekhnologicheskiy institut pi-shchevoy promyshlennosti (for Dushchenko, Pavlovich).
4. Kiyevskiy politekhnicheskiy institut (for Ornatskiy).

(Continued on next card)

TOLUBINSKIY, V.I.--- (continued). Card 2.

5. Odesskiy universitet (for Fedoseyev). 6. Kiyevskiy universitet (for Shvets). Akademiya nauk Ukr.SSR (for Shcherban', Shvets). 7. Chlen-korrespondent AN Ukr.SSR (for Tolubinskiy). 8. Gosudarstvennyy komitet Soveta Ministrov po koordinatsii nauchno-issledovatel'skikh rabot (for Shcherban').

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TCLUREVA, S. N.

"The Influence of Methylene and Sulfine Bridges Between Phenolic Rings on the Tanning Qualities of Synthetic Tanning Agents." Cand Tech Sci, Moscow Technological Inst of Light Industry imeni L. M. Kaganovich, 12 Oct 54. (VNI, 30 Sep 54)

SO: Sum 432, 29 Mar 55

"APPROVED FOR RELEASE: 07/16/2001

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APPROVED FOR RELEASE: 07/16/2001

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TOLUBINSKAYA, L.F.

Investigating heat emission during the heating of hydrocarbon gases.  
Trudy Inst. isp. gaza AN URSR no.4:104-113 '56. (MIRA 10:12)  
(Hydrocarbons) (Gases) (Heat--Transmission)

TOLUBINSKIY, Ye.V.

Integral method for solving the general heat and mass transfer problem. Dokl. AN SSSR 160 no.6:1289-1292 F '65.

(MIRA 18:2)

1. Submitted April 22, 1964.

TOLUBKO, V., general-polkovnik

The main battery is always on the alert. Komm. Voornzh. S:1 46  
no.8:45-47 Ap '65. (MIRA 18:6)

L 45150-66 ARG/EWT(d)/FBO/EWT(m)/EWP(c)/T-2/EWP(h) DE/WW

ACC NR: AP6022450 (A/N) SOURCE CODE: UR/0395/66/000/007/0030/0034

30

B

AUTHOR: Tolubko, V. (Lieutenant General)

ORG: none

TITLE: Rocket technology in reliable hands [Rocket troop training]

SOURCE: Kommunist vooruzhennykh sil, no. 7, 1966, 30-34

TOPIC TAGS: training, military training, guided missile training

ABSTRACT: An important reason for the high firing accuracy of Soviet missiles is the high level of education and strategic training of Soviet missile troops. Their practical training is conducted under conditions very close to reality and takes into consideration the possibility of the enemy's use of mass-destruction means. Soviet missile troops are equipped with long-range ballistic missiles with powerful nuclear warheads developed on the basis of the newest scientific and technical achievements. Seventy-five percent of the officers in the missile troops are engineers educated in the theory of rocket engines, aerodynamics, thermodynamics, chemistry, physics, and electronics. The commanding personnel and instructors in special disciplines

Card 1/2

L 45150-66

ACC NR: AP6022450

have had a pedagogical education and use individual training methods. The author recommends reports and lectures as well as military technical information meetings to be followed by discussions related to some specific field of rocketry, thus raising the interest of participants and their level of knowledge. The interchangeability of responsibilities and skills within crews is recommended. However, only those who have completely mastered their own specialty can successfully undertake learning others. [GE]

SUB CODE: 15/ SUBM DATE: none/

Card 2/2 amsm

TOLUBKO, V.F., general-polkovnik

Honorable mission. Starsh.-serzh. no.5:9 My '62. (MIRA 15:6)

1. Zamestitel' glavnokomanduyushchego Rakitnymi voyskami.  
(Rockets (Ordnance))

ACC NR: AN6034954 (N) SOURCE CODE: UR/9008/66/000/269/0001/0001

AUTHOR: Tolubko, V. E. (Colonel general; First deputy commander in chief of strategic rocket forces)

ORG: none

TITLE: Powerful, invincible force [Soviet missile forces discussed]

SOURCE: Krasnaya zvezda, no. 269, 19 Nov 66, p. 1, cols 4-7

TOPIC TAGS: antitank missile, tactical missile, ballistic missile, solid propellant missile, missile performance, mobile missile site

ABSTRACT: This article states that at the present time the rocket forces are the primary branch of the Soviet armed forces with the ability to strike strategic military targets. Soviet military forces are now receiving an entire complex of strategic weapons, including solid-fuel missiles equipped with mobile launchers; these have greater maneuverability, virtual invulnerability, and high reliability. Rocket forces and army artillery units are presently receiving missile weapons with nuclear warheads, new types of artillery, tactical rockets, and a guided antitank missile.

SUB CODE: 15, 16, 19/ SUBM DATE: none

Card 1/1

ASTASHENKOV, Petr Timofeyevich, inzh.-polkovnik; TOLUBKO, V.F.,  
general-polkovnik, red.; KADER, Ya.M., red.

[Soviet rocket troops] Sovetskie raketnye voiska. Moskva,  
(MIRA 18:2)  
Voenizdat, 1964. 231 p.

1. Pervyy zamestitel' Glavnokomanduyushchego Raketnymi  
voyskami strategicheskogo naznacheniya (for Tolubko).

KOCHANOVSKIY, N.Ya., kand.tekhn.nauk, red.; GROMYKO, L.G., red.;  
YEGOROVA, I.A., red.; TERENT'YEV, Yu.Ya., red.; TOLUB'YEVA,  
Ye.P., red.; ARIFMETCHIKOV, F.V., red.; RODIONOV, Yu.I., red.;  
BALASHOV, V.I., tekhn.red.; BURLAKOVA, O.Z., tekhn.red.

[Welding equipment; annotated catalog] Svarochnoe oborudovanie;  
katalog-spravochnik. Moskva, Tsentr.in-t nauchno-tekhn.  
informatsii elektrotekhn.promyshl. i priborostroeniia, 1960.  
(MIRA 14:4)  
359 p.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosva-  
rochnogo oborudovaniya (for Gromyko, Yegorova, Terent'yev,  
Tolub'yeva). 2. Gosudarstvennyy nauchno-tehnicheskiy komitet  
(for Arifmetchikov). 3. Tsentral'nyy institut nauchno-tehniki-  
cheskoy informatsii elektrotekhnicheskoy promyshlennosti i  
priborostroyeniya (for Rodionov).  
(Welding--Equipment and supplies)

KOCHANOVSKIY, N.Ya., kand.tekhn.nauk, red.; GROMYKO, L.G., red.;  
YEGOROVA, I.A., red.; TERENT'YEV, Yu.Ya., red.; TOLUB'YEVA--  
Ye.P., red.; ARIFMETCHIKOV, F.V., red.; RODIONOV, Yu.I., red.;  
BALASHOV, V.I., tekhn.red.; BURLAKOVA, O.Z., tekhn.red.

[Welding equipment; catalog-handbook] Spravochnoe oborudo-  
vaniye; katalog-spravochnik. Moskva, Tsentr. in-t nauchno-tekhn.  
informatsii elektrotekhn.promyshl. i priborostroeniia, 1960.  
(MIRA 13:12)  
359 p.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektrosvarochno-  
gogo oborudovaniya (for Gromyko). 2. Gosudarstvennyy nauchno-  
tekhnicheskiy komitet (for Arifmetchikov). 3. Tsentral'nyy  
institut nauchno-tehnicheskoy informatsii (for Rodionov).  
(Welding—Equipment and supplies)

PANCHENKOV, G.M.; TOLUMACHEV, A.M.; FEDOROV, V.A.

Synthetic zeolites as ion exchangers. Part 2: Equilibrium  
of ion exchange. Zhur.fiz.khim. 37 no.2:456-459 F '63.  
(MIRA 16:5)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.  
(Zeolites) (Ion exchange)

TURKEY/Chemistry - Aluminum

1950

"The Possibilities of Utilizing Turkish Alunites and Tests Conducted on Geological Specimens from Sebinkarahisar," R. Tolun

"M.T.A." No 40, pp 31-39

188T27  
After reviewing the world's deposits of alunite and the processes in use, discusses the alunite deposits of Turkey. Reserves of 30 million tons of ore at Sebinkarahisar, and important deposits at Yukari Gedehor and Asagi Gedehor, at Saphani, and at Foca are known. Gives detailed analysis of the alunite of Sebinkarahisar. Concludes that there is good possibility of high production with export to neighbor

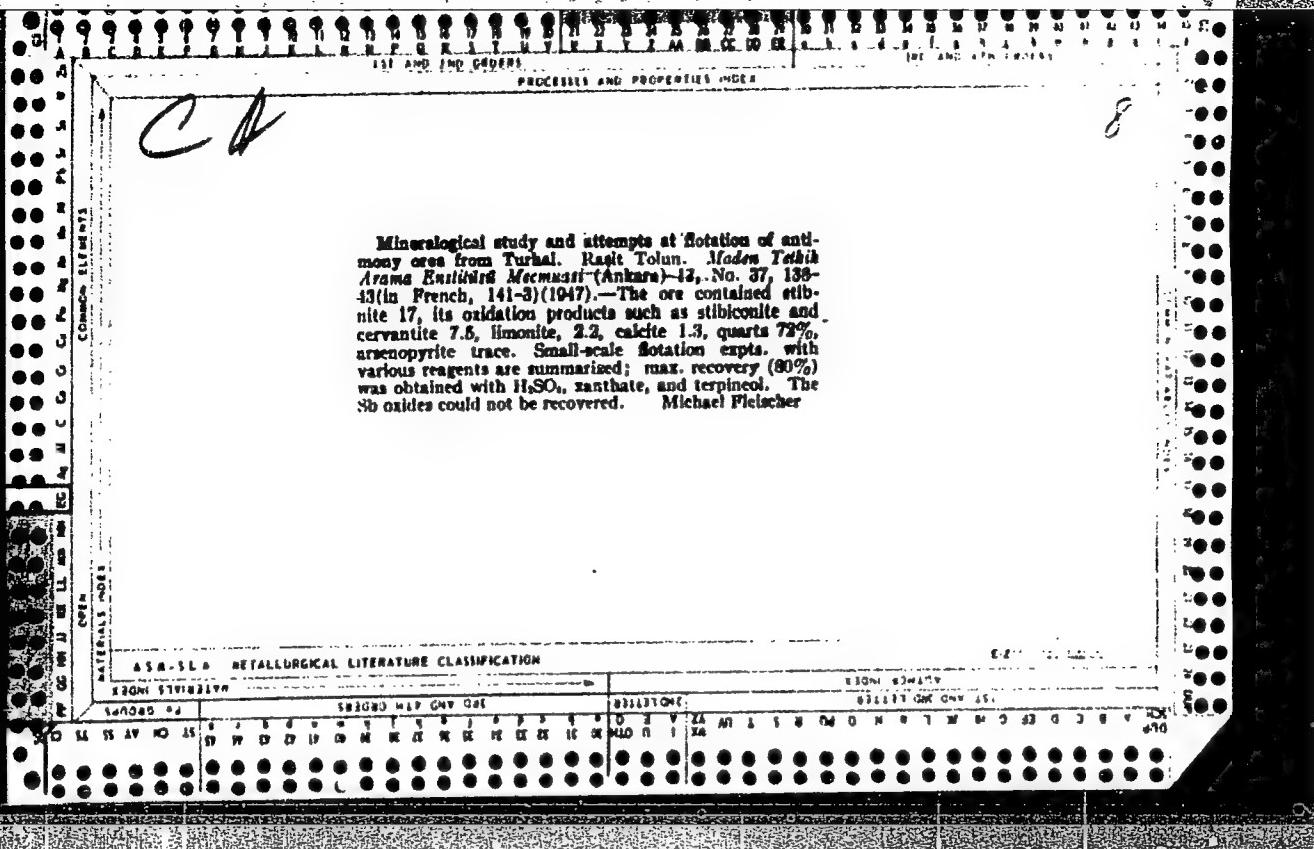
188T27  
1950

TURKEY/Chemistry - Aluminum (Contd)

1950

O.K.  
188T27  
boring countries, and that Turkish plants will be able to compete with foreign production. Discusses possibilities of the US Kalunite process for the production of pure alumina.

TOLUN, R.



EXCERPTA MEDICA Sec 16 Vol 7/6 Cancer June 59

1957. Correlation between metabolism of ribonucleic acid phosphorus and protein synthesis (Russian text) Tolusius I. E. Dept. of Biochem., State Med. Inst., Kaunas Biokhimiya 1958, 23/2 (194-204) Tables 7

The correlation between P and C metabolism of RNA and protein synthesis was studied by incubating cytoplasmic granules isolated from regenerating rat liver. Concurrently the metabolism of phospholipids (PL) and of phosphoproteins (PP) was followed. Use was made of  $\text{Na}_2\text{H}^{32}\text{O}_4$  and  $^1\text{C}^{14}$ -glycine.  $\text{P}^{32}$  is incorporated into RNA, PL and PP upon incubation of large granules under the conditions of oxidative phosphorylation, but the rate of  $\text{P}^{32}$  incorporation does not depend on simultaneous protein synthesis, nor does protein synthesis affect  $\text{P}^{32}$  incorporation upon incubation of microsomes and of 'intermediate' or 'light large granules'. Upon incubation of granules isolated from the liver of rats preliminarily injected with  $\text{P}^{32}$  or  $\text{C}^{14}$  a gradual drop of the isotope concentration in RNA, PL and PP was noted.

1917

Conditions favouring protein synthesis do not accelerate the liberation of P or C from RNA. The lack of correlation between the rate of protein formation and the rate of incorporation and liberation of RNA phosphorus and C indicates that the metabolism of RNA phosphorus is not directly coupled with protein synthesis. In the whole organism the acceleration of protein synthesis (upon regeneration of the liver) is accompanied by an appreciable increase in the rate of both P and C incorporation into RNA, particularly the incorporation of the isotopes into RNA of large cytoplasmic granules which carry out protein synthesis. The parallelism between P and C metabolism revealed in vitro and in vivo indicates against the specific role of RNA phosphorus in protein synthesis. The above evidence does not comply with the hypothesis that RNA participates in protein synthesis through its principal or additional phosphate groupings as an energy donor, nor does it confirm the notion that protein synthesis is invariably accompanied by simultaneous synthesis or breakdown of RNA.

## EXCERPTA MEDICA Sec 2 Vol 12/1 Physiology Jan 59

153. CORRELATION BETWEEN METABOLISM OF RIBONUCLEIC ACID PHOSPHORUS AND PROTEIN SYNTHESIS (Russian text) - Tolushis I. F.  
Chair of Biochem., State Med. Inst., Kaunas - BIOKHIMIYA 1958, 23/2  
(194-204) Tables 7

The correlation between P and C metabolism of RNA and protein synthesis was studied by incubating cytoplasmic granules isolated from regenerating rat liver. Concurrently the metabolism of phospholipids (PL) and of phosphoproteins (PP) was followed. Use was made of  $\text{Na}_2\text{P}^{32}\text{O}_4$  and  $1-\text{C}^{14}\text{-glycine}$ .  $\text{P}^{32}$  is incorporated into RNA, PL and PP upon incubation of large granules under the conditions of oxidative phosphorylation, but the rate of  $\text{P}^{32}$  incorporation does not depend on simultaneous protein synthesis, nor does protein synthesis affect  $\text{P}^{32}$  incorporation upon incubation of microsomes and of 'intermediate' or 'light large granules'. Upon incubation of granules isolated from the liver of rats prellminarily injected with  $\text{P}^{32}$  or  $\text{C}^{14}$  a gradual drop of the isotope concentration in RNA, PL and PP was noted. Conditions favouring protein synthesis do not accelerate the liberation of P or C from RNA. The lack of correlation between the rate of protein formation and the rate of incorporation and liberation of RNA phosphorus and C indicates that the metabolism of RNA phosphorus is not directly coupled with protein synthesis. In the whole organism the acceleration of protein synthesis (upon regeneration of the liver) is accompanied by an appreciable increase in the rate of both P and C incorporation into RNA, particularly the incorporation of the isotopes into RNA of large cytoplasmic granules which carry out protein synthesis. The parallelism between P and C metabolism revealed in vitro and in vivo indicates against the specific role of RNA phosphorus in protein synthesis. The above evidence does not comply with the hypothesis that RNA participates in protein synthesis through its principal or additional phosphate groupings as an energy donor nor does it confirm the notion that protein synthesis is invariably accompanied by simultaneous synthesis or breakdown of RNA.

TOLUTIS, V.

Dissertation: "Conditions of Formation and Properties of the Closing Layer in Systems of Thin Layers." Cand Phys-Math Sci, Vil'nyus State U, Vil'nyus, 1954.  
(Referativnyy Zhurnal--Fizika, Moscow, Aug 54)

SO: SUM 393, 28 Feb 1955

TOLUTIS, V,

SCIENCE

PERIODICAL: DARBAI. SERIJA B. TRUDY. SERIJA B. No. 2, 1958

Tolutis, V. Asymmetry of conductivity systems with multipoint contact. In Russian. p. 25.

Monthly list of East European Accessions (EEAI) LC. Vol. 8, No. 2,  
February 1959, Unclass.

TOLUTIS, V.B. [Tolutis,V.]; SHIMULITE, E.A. [Simulyte,E.]

Rectifiers with a small threshold of rectification based on contact of hexagonal selenium with cadmium, gallium, indium, and thallium. Liet ak darbai B no.2:67-81 '60. (EEAI 10:1)

1. Institut fiziki i matematiki Akademii nauk Litovskoy SSR.  
(Electric current rectifiers) (Selenium)  
(Cadmium) (Gallium) (Indium) (Thallium)

41886  
S/236/62/000/001/002/007  
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26.2420.

AUTHORS: Tolutis, V.B. and Yakutsyavichene, I.A.

TITLE: Combined investigation of thin layers of cadmium telluride. I. Introduction. General methodological problems. Conductivity of thin layers of cadmium telluride in strong electric fields

SOURCE: Akademiya nauk Litovskoy SSR. Trudy. Seriya B, no. 1(28), 1962, 17-31

TEXT: CdTe is of special interest because of its high efficiency in solar energy conversion. A brief review of literature shows that the method of preparation influences strongly the structure and composition of CdTe. In the present work (reported in Parts I-V) CdTe was prepared (by V. Yasutis) by melting together (at 600°C, followed by 1000°C) spectroscopically pure Cd and 99.998% pure Te in vacuum. This was followed by grinding the product and remelting at 1100°C (3 hours). The final product was of 99.999% purity. Thin ( $1\mu$ ) layers of CdTe were obtained by evaporation and

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deposition in vacuum on cold or heated (to 350°C) quartz and other substrates. The adhesion was good on heated substrates but poor on cold ones. The adhesion was related to the characteristic temperature dependence of the linear thermal expansion coefficient of CdTe; the room-temperature value of this coefficient, measured with a MII-4 (MII-4) interference microscope, was found to be  $6.2 \times 10^{-6}$  deg-1. The combined investigation consisted of a series of measurements of various properties using the same principle. The order of measurements was carefully selected to avoid the effects of irreversible changes and most of the measurements were carried out in vacuum. The properties of CdTe layers were strongly influenced by the conditions of deposition because CdTe decomposes on evaporation into Te<sub>2</sub> and Cd and recombines again on the substrate. The nonlinearity of the current-voltage characteristics of CdTe layers in strong electric fields ( $10^5$  V/cm) was found to be principally due to heating by the fields. There are 9 figures.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of Physics and Mathematics, Academy of Sciences, LithSSR)

SUBMITTED: February 23, 1961

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41887  
S/236/62/000/001/003/007  
D207/D307

26. 24. 20

AUTHORS:

Tolutis, V.B. and Shimulite, Ye.A.

TITLE:

Combined investigation of thin layers of cadmium telluride. II. Electrical conductivity in weak electric fields and contact phenomena

SOURCE:

Akademiya nauk Litovskoy SSR. Trudy. Seriya B,  
no. 1(28), 1962, 33-50

TEXT: This paper is a continuation of the combined investigation of thin layers of cadmium telluride (see Part I). Electrical properties were measured on layers of stoichiometric composition, as well as on layers with an excess of tellurium or cadmium. The excess of tellurium was produced by heating in high vacuum, the excess of cadmium - by heating in saturated cadmium vapor or by the Vekshinsky method. The treatment in saturated cadmium vapor was carried out by K. Valatska and V. Yasutis. The temperature dependence of the electrical conductivity was found in high vacuum using probes and the electrometer circuit. Measurements at low temperatures were limited by the fact that the resistance rose rapidly: at -40°C the

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resistance reached  $10^{13}$  -  $10^{14}$  ohm. The rectilinear  $\log \sigma = f(1/T)$  characteristics ( $\sigma$  is the electrical conductivity and  $T$  is the temperature) were strongly altered by heating to  $450^{\circ}\text{C}$  because such heating changed the concentration of impurity centers. The high-temperature variations in the impurity-center concentration were due to cadmium which can easily leave its lattice site because of its low activation energy and small radius. The complex mechanism of carrier recombination was due to the instability of the concentration of recombination centers which were produced by secondary thermal ionization of cadmium vacancies or interstitial cadmium atoms; the interaction between volume and surface processes also affected carrier recombination. The activation energies of the impurity centers and the forbidden band width ( $\sim 1.5$  eV) of the layers agreed well with the values for monocrystals. Contact phenomena were investigated by: 1) recording current-voltage characteristics, 2) studying the potential distribution across the sample by means of a moving probe, or 3) measuring the noise level. It was found that satisfactory ohmic contacts with p-type layers were obtained using gold, silver and antimony electrodes. Gold electrodes which were

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not heat-treated formed ohmic contacts with n-type layers; heating destroyed the ohmic nature of these contacts. Indium electrodes on n-type layers were ohmic, but on p-type they had rectifying properties. The ohmic nature of indium contacts on n-type layers was retained after heating; aluminum electrodes had properties similar to those of indium. The lowest contact noise was obtained with ohmic indium electrodes. The contact phenomena could all be explained within the framework of the usual contact theory by taking into account the specific properties of CdTe layers. There are 10 figures and 1 table.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of Physics and Mathematics, Academy of Sciences, LithSSR)

SUBMITTED: February 23, 1961

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41888  
S/236/62/000/001/004/007  
D207/D307

26. 16. 50  
AUTHORS:

Valatska, N.K. and Tolutis, V.B.

TITLE:

Combined investigation of thin layers of cadmium telluride. III. Photoelectric properties

SOURCE:

Akademiya nauk Litovskoy SSR. Trudy. Seriya B,  
no. 1(28), 1962, 51-62

TEXT: This paper is a continuation of the combined investigation of thin layers of cadmium telluride (see Parts I-II). Photoelectric properties were measured on layers heat-treated in vacuum (excess Te) and in Cd vapor (excess Cd). The layers deposited in vacuum on cold substrate, had low photosensitivity. After heating in vacuum or in Cd vapor photosensitivity increased due to greater grain dimensions and more perfect structure. The photoconductivity maximum at  $0.83 \mu$  corresponds to the fundamental absorption edge of CdTe and is related to the volume photoconductivity. The fall of the photoconductivity in the fundamental absorption region is due to strong carrier recombination on the surface. A small

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additional photoconductivity maximum at  $0.89 \mu$  was found in the samples heat-treated in Cd vapor. The activation energy determined from the wavelength at which the photocurrent peak decreased to half its value on the long-wavelength side did not represent the forbidden band width of CdTe. This band width and its temperature dependence was found using the inflection point on the short-wavelength side of the photocurrent peak; the value of the forbidden band width was  $1.53 - 1.54$  eV. The temperature coefficient of the forbidden band width was  $-(3.1 - 3.6) \times 10^{-4}$  eV/deg. The layers heat-treated in Cd vapor exhibited quite slow relaxation of the photoconductivity (the relaxation time was of the order of several minutes); the decay was hyperbolic. The steady-state photoconductivity was proportional to  $L^\alpha$ , where L is the luminous flux and  $\alpha = 0.5 - 1$ . For the majority of samples at room temperature  $\alpha = 0.5$ . On increasing the temperature to  $100^\circ\text{C}$   $\alpha$  approached 1; this was due to increase of the dark conductivity. By suitable heat treatment it was possible to obtain CdTe photoresistors with relatively low dark resistance ( $10^7 - 10^6$  ohm). Acknowledgement is made to Professor P. Brazdzhunas for reading the manuscript and

Card 2/3

Combined investigation ...

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his valuable remarks. There are 7 figures and 1 table.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of Physics and Mathematics, Academy of Sciences, LithSSR)

SUBMITTED: February 25, 1961

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Card 3/3

41890  
S/236/62/000/001/006/007  
D207/D307

26.4.20

AUTHORS: Kuchis, Ye.V. and Tolutis, V.B.

TITLE: Combined investigation of thin layers of cadmium telluride. V. Some methodological problems in investigation of the Hall effect in thin high-resistivity semiconductor layers

SOURCE: Akademiya nauk Litovskoy SSR. Trudy. Seriya B, no. 1(23), 1962, 73-84

TEXT: This paper is continuation of the combined investigation of thin layers of cadmium telluride (see Parts I-IV). Difficulties in measurement of the Hall effect using alternating electric and magnetic fields are discussed. This method has been described by B.R. Russel and C. Jahling (Rev. Sci. Instr., 21, 1028-29, 1950), J.L. Levy (Phys. Rev., 92, 215-128, 1953) and Ya. Dushek (Czechosl. J. Phys., no. 9, 250-255, 1959). The difficulties are: 1) instability of the electric ( $f_E$ ) and the magnetic ( $f_H$ ) field frequencies which make the difference frequency  $f_X = f_E - f_H$  also unstable, 2)

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Combined investigation ...

instability of the amplification factor of the narrow-band amplifier which is used to select  $f_X$ ; 3) appearance of signals with frequencies  $f_E$  and  $f_H$  at the amplifier input and in the sample giving rise to unwanted signals; 4) high noise level of the Hall probes; 5) shunting action of the stray capacitance of the amplifier input. These and less important difficulties are dealt with briefly and circuit modifications are suggested for their elimination. The maximum sensitivity of the authors' apparatus was limited by the thermal noise of the input impedance and was represented by the carrier mobility (determined from the Hall effect) of  $4 \times 10^{-3} \text{ cm}^2 = \text{v}^{-1} \text{ sec}^{-1}$  which was obtained for sample resistances up to  $10^8 \text{ ohm}$ . The apparatus can be used for measurement on samples of up to  $10^{12} \text{ ohm}$  resistance when the sensitivity falls to  $10 \text{ cm}^2 = \text{v}^{-1} \text{ sec}^{-1}$ . At all the sample resistances up to  $10^{12} \text{ ohm}$  the authors' apparatus had a sensitivity higher than that of other apparatus described in literature. There are 6 figures.

ASSOCIATION: Institut fiziki i matematiki Akademii nauk Litovskoy SSR (Institute of Physics and Mathematics, Academy

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of Sciences, LithSSR)

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L 11926-66 EHT(1)/EWT(m)/ETC(F)/EMG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD/AT  
ACC NR: AT5028695 SOURCE CODE: UR/3910/64/004/004/0519/0527  
*44 35 44 35 44 35 44 35*  
AUTHOR: Deksnis, A. P. (Deksnys, A.); Tolutis, V. B.; Shimulite, Ya.  
A. (Simulyte, E.)  
ORG: Institute of Physics and Mathematics, Academy of Sciences Lithuanian SSR (Institut fiziki i matematiki Akademii nauk Litovskoy SSR)  
TITLE: Photoelectric properties of contacts between thin cadmium telluride films and metals.  
SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 4, no. 4, 1964,  
519-527  
TOPIC TAGS: cadmium telluride, photosensitivity, gold, silver, copper, bismuth, nickel, antimony, photoelectric property, space charge, photo emf, relaxation process, thin film  
*21, 44, 55*  
ABSTRACT: Photoelectric properties of contact of a thin CdTe (n) film with Au, Ag, Cu, Bi, Sb, and Ni were studied. The lux ampere, lux volt, and load characteristics as well as the spectral photosensitivity and relaxation processes were investigated. The characteristics of photoelectric phenomena in such contacts were found to be determined by the state of the CdTe(n)-metal interface. The height of the potential bar-

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rier in such a contact does not exceed 0.45 V. Large reverse dark currents in the contact may be explained by (1) the presence of high conductivity portions in the space charge region (due to structural defects of the layer) and an irregular distribution of the impurities, and (2) the generation of charge carriers by deep energy levels of foreign impurities in the space charge region. It was established that the relaxation processes of the photo emf in the contact are determined by the capacitance and differential resistance of the barrier layer and by the resistance of the external circuit. Orig. art. has: 8 figures, 21 formulas.

SUB CODE: 20/ SUBM DATE: 09Jan64/ ORIG REF: 003/ OTH REF: 000

BC  
Card 2/2

L 11925-66 EWT(1)/EWT(m)/ETC(E)/EWG(m)/EWP(t)/EWP(b) IJP(c) RDW/JD  
ACC NR: AT5028693 SOURCE CODE: UR/2910/64/004/004/0497/0507

AUTHOR: Tolutis, V. R.; Shimulite, Ye. A. (Simulyte, E.)

ORG: Institute of Physics and Mathematics, Academy of Sciences Lithuanian SSR (Institut fiziki i matematiki Akademii nauk Litovskoy SSR)

TITLE: Electric properties of a film pn junction and of contacts of cadmium telluride thin films with metals of groups I, III, V, and VIII

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 4, no. 4, 1964, 497-507

TOPIC TAGS: pn junction, thin film circuit, cadmium telluride, space charge, impurity level, electric conduction

ABSTRACT: The electric properties of contacts of CdTe(n) with Al and In, CdTe(p) with Au, CdTe(n) with Au, Ag, Cu, Sb, Bi, and Ni, and the CdTe(n)-CdTe(p) film pn junction were studied. A study of the potential distribution in longitudinal samples near the electrodes and of properties of transverse systems of the type M<sub>1</sub>-CdTe(n)-M<sub>2</sub> and M<sub>1</sub>-CdTe(n)-CdTe(p) showed that the character of the conduction of such contacts is substantially affected by the state of the surface of CdTe thin films during deposition of the electrode. It is shown that at the surface of

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CdTe(*n*) films there is usually a substantial potential barrier resulting from a considerable concentration of acceptor levels due to adsorbed foreign molecules, (e. g., oxygen or water) and a surface layer in which the concentration of excess cadmium is much less than in the lower levels of the layer. The absence of a definite dependence of the thickness of the space charge layer on the conductivity of the CdTe(*n*) thin film, the absence of a definite region of saturation currents in the reverse direction, and the large resistance of the base part of the system are due to a high degree of compensation of the impurity levels in the CdTe(*n*) thin film. The strong dependence of the currents on the voltage in the reverse direction and their large nominal values are explained by shunting regions of high conductivity in the barrier layer and the generation of carriers by deep impurity levels in the space charge region. Orig. art. has: 13 figures.

SUB CODE: 20/ SUBM DATE: 29Dec63/ ORIG REF: 005/ OTH REF: 003

PC  
Card 2/2

L 11924-66 EWT(1)/EWT(m)/ETC(F)/EWG(m)/T/EWP(t)/EWP(b)/EWA(h)/EWA(c) IJP(c)

ACC NR: AT5028694 RDW/JD/AT SOURCE CODE: UR/2910/64/004/004/0509/0518

AUTHOR: Deksnis, A. P. (Deksnys, A.); Tolutis, V. B.; Shimulite, Ye. A.  
(Simulyte, E.)

ORG: Institute of Physics and Mathematics, Academy of Sciences Lithuanian SSR (Institut fiziki i matematiki Akademii nauk Litovskoy SSR)

TITLE: Photoelectric properties of a film cadmium telluride pn junction

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 4, no. 4, 1964,  
509-518

TOPIC TAGS: cadmium telluride, photosensitivity, photoelectric property, space charge, relaxation process, photo emf, pn junction, thin film circuit, minority carrier

ABSTRACT: The lux ampere, lux volt, and load characteristics as well as the spectral photosensitivity and relaxation processes were studied. It was found that the state of the interface--in this case the interface between CdTe(n) and CdTe(p)--and the degree of compensation of energy levels in the CdTe film considerably affect the photoelectric phenomena in a CdTe film junction just as in a CdTe(n)-metal contact. It is shown that a prime role in these phenomena is played by processes of generation and recombination of carriers in the space charge region.

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ACC NR: AT\$028694

The mean lifetime of minority carriers  $\tau_0$  is approximately equal to  $5 \cdot 10^{-10}$  sec, the mean diffusion length  $L_0$  to  $6.3 \cdot 10^{-5}$  cm, and the maximum height of the potential barrier does not exceed 0.65 V. The relaxation processes of the photo emf in the film junction are determined by the capacitance and differential resistance of the barrier layer and also by the resistance of the external circuit. Comparison of the characteristics of the film junction with the characteristics of a single crystal photocell reported in the literature shows that the film junctions have greater ballast resistances and poorer photoelectric characteristics in other reports than single crystal junctions, and as a result their efficiency is only one-third that of single crystal cells. Illumination of a film junction with sunlight having an energy flux of 50 mW cm<sup>-2</sup> produced a no-load photo emf of 600 mV, a short circuit current of 2.1 ma cm<sup>-2</sup>, and an efficiency of 2.5%. Orig. art. has 7 figures, 1 table, 21 formulas.

SUB CODE: 20/ SUBM DATE: 09Jan64/ ORIG REF: 003/ OTH REF: 002

PC  
Card 2/2

L 44025-66 EWT(m)/T/EWP(t)/ETI IJP(c) JD

ACC NR: AT6023222

SOURCE CODE: UR/2910/65/005/003/0377/0386

AUTHOR: Deksnis, A. P. — Dekanys, A.; Paukshte, Yu. A. — Paukste, J.; Tolutis,  
V. B. — Tolutis, V.

52  
BA

ORG: Institute of Physics and Mathematics, Academy of Sciences, Lithuanian SSR (Institut  
fiziki i matematiki Akademii nauk Litovskoy SSR)

TITLE: Characteristics of thin layers of the In-Te system in the region from 60 to 50% Te

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik. v. 5, no. 3. 1965, 377-386

TOPIC TAGS: indium compound, tellurium compound, semiconducting film, magnetic thin  
film, PHASE DIAGRAM

ABSTRACT: The phase diagram of thin layers of the In-Te system obtained by applying a  
stoichiometric compound  $In_2Te_3$  by instantaneous vaporization on glass backings, which  
had a temperature gradient from 450 to 670K during spraying, was investigated. It was  
established that the phase diagram of such layers in the direction of the temperature gradient  
can characterize both a continuous cross section of the constitution diagram of the In-Te  
system in the region from 60 to 50% Te, and that there are three compounds and two transi-  
tion regions in this phase cross section: the compound  $In_2Te_3$  with an activation energy at

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ACC NR: AT6023222

290K of 1.10 eV, the compound InTe with a metallic absorption character, and an unknown phase with an activation energy of 1.52 eV. The transition between the unknown phase and the phase  $In_2Te_3$  consists of large phase inclusions of an unknown phase in the  $In_2Te_3$  phase. It was also established that the thin layer of the compound  $In_2Te_3$  is in an unordered state and that the degree of the structural defects of the thin layers of the compound  $In_2Te_3$  rapidly increases with a drop of temperature of the backing when spraying the layer. It is pointed out that the value of the activation energy obtained in this investigation for the compound  $In_2Te_3$  ( $\Delta E = 1.10$  eV) is close to the values obtained from electrical and optical investigations. The results of the investigation permit the assertion that the unknown phase really exists as an independent compound. It is difficult to say whether the unknown phase can be identified with the compound  $In_2Te_3$  at present since there is no information about this compound in the literature except for one reference, and other researchers completely ignore the existence of this compound. The answer to this problem can be obtained only by a detailed x-ray structural analysis of this phase. Orig. art. has: 6 figures.

SUB CODE: 11/ SUBM DATE: 01Feb65/ ORIG REF: 003/ OTH REF: 008

Card 2/2 blg

L 44292-66 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/JW/JG/GG  
ACC NR: AT6023223 SOURCE CODE: UR/2910/65/005/003/0387/0393

54  
BFJ

AUTHOR: Bertulis, K. P.; Tolutis, V. B.

ORG: Institute of Physics and Mathematics of the Academy of Sciences of the  
Lithuanian SSR (Institut fiziki i matematiki Akademii nauk Litovskoy SSR)

TITLE: Dielectric properties of thin films of praseodymium, cerium, and  
neodymium fluorides

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik, v. 5, no. 3, 1965, 387-393

TOPIC TAGS: dielectric constant, dielectric property, dielectric loss,  
praseodymium, cerium, neodymium, fluoride

ABSTRACT: The results are presented of an investigation of both the effective  
dielectric constants ( $\epsilon_{eff}$ ) and dielectric losses of thin films of praseodymium ( $PrF_3$ ),  
cerium ( $CeF_3$ ), and neodymium ( $NdF_3$ ) fluorides. It was shown that the large values  
of  $\epsilon_{eff}$  and the dependence of dielectric losses on temperature and frequency may be

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L 44292-66  
ACC NR: AT6023223

explained by the presence of the barrier layers under the electrodes. The effective impurity-activation energies were determined to be: for  $\text{PrF}_3$  0,5—0,6 ev, for  $\text{NdF}_3$  and  $\text{CeF}_3$  0,8—1,1 ev. The value of the forbidden band of  $\text{CeF}_3$ , determined from the absorption measurements, is 4,85 ev, while the values for  $\text{PrF}_3$  and  $\text{NdF}_3$  seem to be close to 5,9—6,4 ev. The process of aging of the films was investigated, and the dependence of the breakdown field was determined according to the thickness of the films. Orig. art. has 6 figures. [Based on authors' abstract] [AM]

SUB CODE: 20 / SUBM DATE: 31Dec64 / ORIG REF: 001 / OTH REF: 004 /

Card 2/2-11/85

L 40860-66 ENT(d)/ENT(1)/EEG(k)-2/I IJP(c) AT  
ACC NR: AT6023227

SOURCE CODE: UR/2910/65/005/003/0417/0424

AUTHOR: Chesnavichyus, A. A. — Cesnavicius, A.; Alekseyunas, A. A. — Aleksiejonas,  
A.; Tolutis, V. B. — Tolutis, V.

ORG: Institute of Physics and Mathematics, Academy of Sciences Lithuanian SSR  
(Institut fiziki i matematiki Akademii nauk Litovskoy SSR)

54  
B+1

TITLE: Impulse-sinusoidal method of measuring the volt-capacitance and volt-ampere  
characteristics of relaxing p-n-junctions 9 M

SOURCE: AN LitSSR. Litovskiy fizicheskiy sbornik. v. 5, no. 3. 1965, 417-424

TOPIC TAGS: volt ampere characteristic, electric capacitance, capacitance bridge, pn  
junction

ABSTRACT: A bridge method operating under impulse-sinusoidal conditions is proposed  
for the simultaneous measurement of the barrier capacitance and static and base resis-  
tances of relaxing p-n-junctions, i.e., junctions with time-dependent parameters. Cal-  
culations of the errors and the results of an experimental check of the correctness of  
the method are given. A special feature of the proposed method is that a square  
pulse with a peak modulated by a variable voltage is sent to the input of the bridge  
used for the measurements. This bridge is balanced both with respect to the variable  
and constant components of the supply voltage. This method of measurement has the ad-  
vantage that the three electrical parameters of the p-n-junction can be measured  
simultaneously. To check the proper operation of the bridge, the volt-capacitance  
and volt-ampere characteristics of selenium rectifiers were measured under pulsed and

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ACC NR: AT6023227

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direct current conditions. The discrepancy of the results obtained under these conditions is attributed to the specimens being heated by the current, which is confirmed by the shape of the volt-ampere characteristic recorded under these conditions. It is concluded that this method permits studying the volt-capacitance and volt-ampere characteristics of relaxing p-n-junctions with relatively large base resistances with a measurement error not exceeding 1%. Orig. art. has: 8 figures and 8 formulas.

SUB CODE: 09/ SUBM DATE: 12Jan65/ ORIG REF: 006/ OTH REF: 003

Card 2/2

IC

ACC NR: AR7000835

SOURCE CODE: UR/0058/66/000/009/A047/A047

AUTHOR: Tolutis, V. B.; Yasutis, V. V.

TITLE: Effect of substrate temperature on the macro- and microstructure of thin cadmium telluride film

SOURCE: Ref. zh. Fizika, Abs. 9A400

REF SOURCE: Lit. fiz. sb., v. 5, no. 4, 1965, 495-502

TOPIC TAGS: cadmium telluride, thin film, ~~thin film~~<sup>grain</sup> structure, ~~thin~~<sup>metal</sup> film, ~~macrostructure~~, ~~substrate temperature~~, ~~thin film structure~~, ~~thin film~~<sup>growth</sup>, ~~mechanism~~, polycrystalline film, ~~high temperature effect~~<sup>crystal</sup>

ABSTRACT: A study was made of the parameters of the macro- and microstructure of sputtered thin CdTe film as a function of substrate temperature ( $T_n$ ) within the 120—245C range. Two substantially different structural regions, separated by a narrow transitional area with the point of separation at  $T_n \approx 185C$ , were identified in the film on the basis of several factors: the nature of the relationship between the parameters of the distribution curve for the area of the film's visible structure in relation to the grain size of the crystals (maximum distribution func-

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ACC NR: AR7000835

tion values, distribution curve half-widths), the mean crystal grain area values, the effective CdTe accommodation coefficient, the texture parameters, and the correlation between the cubic and hexagonal phases of the film as a function of  $T_n$ . It was found that the causes of such a sharp demarcation in the structure of the film as a function of  $T_n$  are the conditions for the condensation of Te, which determine the mechanism of the growth of the CdTe layer as a whole. A model of the mechanism of the growth of the CdTe film is given. [Translation of abstract]

[SP]

SUB CODE: 20/

Card 2/2

BLESTKINA, T.G.; TOLUZAKOV, V.L.

Unusual case of esophageal cancer combined with chronic  
myeloid leukemia. Vop.onk. 9 no.2:101 - 103 '63.  
(MIRA 16:9)

1. Iz khirurgicheskoy kliniki usovershenstvovaniya vrachey  
no.1 Voyenno-meditsinskoy ordena Lenina Akademii imeni S.M.  
Kirova (nachal'nik kliniki - deystvitel'nyy chlen AMN SSSR  
prof. general - leytenant meditsinskoy sluzhby P.A.Kupriyanov).  
(ESOPHAGUS—CANCER) (LEUKEMIA)  
(MARROW—DISEASES)

SEYRO, S.B., kand.med.nauk; TOLUZAKOV, V.L., kand.med.nauk

Felty's syndrome; clinical aspects, pathogenesis, therapy. Terap. (MIRA 13:3)  
arkh. 31 no.10:76-81 O '59.

1. Iz kliniki 1-y fakul'tetskoy terapii (nachal'nik - prof. V.A.  
Beyer) i kliniki khirurgii usovershenstvovaniya vrachey (nachal'nik -  
deyatvitel'nyy chlen AMN SSSR prof. P.A. Kupriyanov) Voyenno-meditsin-  
skoy ordena Lenina akademii imeni S.M. Kirova.  
(ARTHRITIS, RHEUMATOID)

GEYRO, S.B.; TOLUZAKOV, V.L.

Surgical treatment of patients with Felty's syndrome. Vest. khir.  
85 no. 8:81-88 Ag '60. (MIRA 14:1)  
(ARTHRITIS, RHEUMATOID) (SPLEEN-SURGERY)

KOLESOV, A.P.; KUTUSHEV, F.Kh.; TOLUZAKOV, V.L.; BURMISTROV, M.Z.;  
SHABLIY, I.P.

Operability and the immediate outcome of surgical treatment  
of lung cancer. Vop. enk. ll no.11:22-26 '65.  
(MIRA 19ci)

1. Iz khirurgicheskoy kliniki dlya usovershenstvovaniya  
vrachey №.1 (nachal'nik - prof. A.P. Kolesov) Voyenno-meditsinskoy  
ordena Lenina akademii imeni S.M. Kirova.

TOLUZAKOV, V.L. (Leningrad, K-9, ul. Smirnova, d.8, kv.53); KROL, Ya.M.;  
DAVYDENKO, V.A.; BONK, G.M.

So-called cavitary form of pulmonary cancer. Vop. onk. 10 no.5:  
(MIRA 18:8)  
3-10 '64.

1. Iz khirurgicheskoy kliniki dlya usovershenstvovaniya vrachey  
No.1 Vojenno-meditsinskoy akademii imeni Kirova (nachal'nik -  
prof. A.P.Kolesov).

TOLUBAEV, G. A.; DAVIDESKO, V. A.; KROL, Ya. M.; BONK, G. M.

Radiogenetical evidences of the inoperability of pulmonary  
cancer. Vop. onk. 11 no.7:9-17 '65. (MIRA 18:9)

1. Iz khirurgicheskoy kliniki dlya usovremenstvovaniya vrachey  
No.1 Voyennno-meditsinskoy ordena Lenina akademii imeni S.M.  
Kirova (nachal'nik - prof. A.P. Kolesov).

KRASNOROGOV, B.V.; TOLUZAKOV, V.L.

- Diagnostic errors in lung cancer. Vop.onk. 9 no.2:11-16'63.  
(MIRA 16:9)

1. Iz khirurgicheskoy kliniki usovershenstvovaniya vrachey no.1.  
(nachal'nik - deystvitel'nyy chlen AMN SSSR prof. P.A.Kupriyanov)  
Voyenno-meditsinskoy ordena Lenina Akademii imeni S.M. Kirova.  
(LUNGS—CANCER)

KUPRIYANOV, P.A., prof.; BLESTKINA, T.G.; IZBINSKIY, A.L., dotsent;  
TOLUZAKOV, V.L., kand.med.nauk; SHANIN, Yu.N., kend.med.nauk

Postoperative period in patients with acquired heart defects.  
Khirurgija no.1:23-30 '62. (MIRA 15:11)

1. Iz khirurgicheskoy kliniki dlya usovershenstvovaniya vrachey  
No.1 (nach. - deystvitel'nyy chlen AMN SSSR prof. P.A. Kupriyanov)  
Voyenno-meditsinskoy ordena Lenina akademii imeni S.M. Kirova.  
(HEART—SURGERY)

UVAROV, B.S., TOLUZAKOV, V.L., kand.med.nauk

Potentiated anesthesia in major surgery. Nov.khir.arkh. no.1:3-10  
(MIRA 11:11)  
Ja-F '58

1. Khirurgicheskaya klinika usovershenstvovaniya vrachey (nachal'nik  
prof. P.A. Kupriyanov) Voynno-meditsinskoy akademii imeni S.M.  
Kirova. Adres avtorov: Leningrad, pr. K. Marks, d.5/6, klinika  
khirurgii Instituta dlya usovershenstvovaniya vrachey Voyenno-  
meditsinskoy akademii imeni S.M. Kirova.  
(ANESTHESIA)

GEYRO, S. B., dotsent; TOLUZAKOV, V. L., kand. med. nauk; DYGIN, V. P.  
(Leningrad)

Splenectomy in autoimmune diseases of the blood system. Klin. med.  
(MIRA 14:12)  
no. 6:62-69 '61.

1. Iz kliniki fakul'tetskoy terapii (nach. - prof. V. A. Beyer)  
i kliniki khirurgii dlya usovershenstvovaniya vrachey (nach. -  
deystvitel'nyy chlen AMN SSSR prof. P. A. Kupriyanov) Voyenno-  
meditsinskoy ordena Lenina akademii imeni S. M. Kirova.

(SPLEEN—SURGERY) (BLOOD--DISEASES)

*G. L. Tolvi & J. S. Surokant*

B A.  
B II  
B

*Hydramer* softening. G. L. Tolvi (*Svensk Papp. Tidsn.*, 1952, 66, 316-320).—Sulphate pulp was treated batchwise in a Hydramer running at 1450 and 1600 r.p.m. and the effects of consistency and throughput were investigated. Reduction of the bar-to-bar clearance and raising the consistency increased the beating effect. This brought about a considerable increase in tearing strength which was further increased by higher consistency. The best values for breaking length and bursting area were obtained at 2-3% consistency. Operating at higher peripheral speed and with wider clearance between bars is suitable for beating weaker fibres and disintegrating fibre bundles. The beating effect can then be increased by throttling the output and the desired strength properties produced by changing the consistency. G. V. Surokant.

TOLVINSKAYA, A. V.

Tolvinskaya, A. V.

"The Surface Resistance of Solid Dielectrics." Min Higher Education USSR.  
Leningrad Polytechnic Inst imeni M. I. Kalinin. Leningrad, 1955 (Dissertation for the degree of Candidate in Technical Sciences)

SO: Knizhnaya letopis' No. 27, 2 July 1955

BRZHEZANSKIY, V.I., inzh.; VAKSER, N.M., inzh.; PETROVA, K.N., inzh.;  
TOLVINSKAYA, A.V., kand.tekhn.nauk

Dependence of the electrical properties of mica plastics on the  
initial raw materials. Vest. elektro prom. 34 no.5:9-11 My '63.  
(MIRA 16:5)

(Mica--Electric properties) (Plastics--Electric properties)

ACC NR: AT6022764 (A) SOURCE CODE: UR/2563/65/000/258/0138/0141

AUTHOR: Brzhezanskiy, V. I.; Vakser, N. M.; Tolvinskaya, A. V.

ORG: none

TITLE: Mica plastics

SOURCE: Leningrad. Politekhnicheskiy institut. Trudy, no. 258, 1965.  
Vysokovol'tnaya izolyatsiya liniy i apparatov (High voltage insulation of lines and  
apparatus), 138-141

TOPIC TAGS: mica product , mica plastic , mica

ABSTRACT: The mica plastic consists of small phlogopite flakes bonded by aluminum phosphate (Soviet trademark AF-2,5) or silicone. Developed by the Department of Electric Insulation, Cables, and Capacitors, LPI, the new material is intended as insulation operating at 350–400C in electrical equipment. Within 25–400C, the mica plastic has  $tgd$  from about 0.04 to about 0.25 and  $\epsilon$  about 6 or 7 measured at 1000 cps. Although good electrical characteristics were ensured

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L 04161-67 EWP(e)/EWT(m) WH

ACC NR: AF6023674

SOURCE CODE: UR/0143/66/000/004/0025/0029

AUTHOR: Brzhezanskiy, V. I. (Engineer); Vakser, N. M. (Engineer); Tolvinskaya, A. V. (Engineer) 32  
33

ORG: Leningrad Polytechnic Institute im. M. I. Kalinin (Leningradskiy  
politekhnicheskiy institut) 15

TITLE: Comparison of the properties of sheet mica made from muscovite,  
phlogopite, and vermiculite

SOURCE: IVUZ. Energetika, no. 4, 1966, 25-29

TOPIC TAGS: mica, dielectric property

ABSTRACT: All mica test samples were prepared with the same binder,  
that is, with Type K-47 organosilicon lacquer, used in the amount of 4%  
with respect to the dry sample. All the samples were baked under the  
same conditions: 300°C, pressure 40 kg/cm<sup>2</sup>, for 5 hours. Measurements  
of the tangent of the dielectric losses and dielectric permeability were  
made at a frequency of 1 kilocycle. The results of the tests are shown  
in a series of curves. The best electrical properties and the least  
dependence of these properties on temperature were found for sheet mica  
made from muscovite; on heating this sheet mica from 22 to 600°C, the

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UDC: 621.315.613.1

L 04161-67

ACC NR: AP6023674

tangent of the dielectric losses rose from 0.017 to 0.11; the specific volumetric resistance decreased from  $5.8 \times 10^{13}$  to  $7.8 \times 10^{11}$  ohm-cm; the dielectric permeability rose from 3.4 to 3.7; the electric strength decreased from 27 kilovolts/mm to 22 kilovolts/mm. In sheet mica made from phlogopite, values of the properties of the same order were observed at a temperature of 350°C, as compared with 600°C for the sheet mica made of muscovite. Thus, sheet mica made of muscovite with K-47 lacquer can be used up to 500°C, if at this temperature there is required an electrical strength of the order of 20 kilovolts/mm. Above 500°C, water of crystallization begins to separate out, which leads to a change in the properties of this sheet mica at higher temperatures. Sheet mica made of phlogopite can be used up to 350°C; above this temperature, there is a sharp rise in the tangent of the dielectric losses. Sheet mica made of vermiculite can be used only up to 250°C, for the same reason. In general, the muscovite sheet mica is considered the best for most applications. Orig. art. has 6 figures.

SUB CODE: C8 / SUBM DATE: 04Dec64 / ORIG REF: 001

Card 2/2

65081 69581  
SOV/112-59-22-45361

Translation from: Referativnyy zhurnal, Elektrotehnika, 1959, Nr 22, pp 9-10 (USSR)

24.7700  
AUTHOR:

Tolvinskaya, A.V.

TITLE: The Influence of the Contact Wetting Angle and Hardness of the Dielectric on Its Surface Resistance

PERIODICAL: Nauchno-tekhn. inform. buyl. Leningr. politekhn. in-t, 1958, Nr 7,  
pp 16 - 21

ABSTRACT: The specific surface resistance  $\rho_s$  of dielectrics depends to a great extent on the humidity of the surrounding air. For different dielectrics this dependence is different, which is explained by the different wettability of dielectrics, determined by the contact wetting angle. When the contact wetting angle is determined, it can be said beforehand, whether  $\rho_s$  will decrease with an increase in the relative humidity of the surrounding air. Inorganic dielectrics have a smaller contact wetting angle and consequently their  $\rho_s$  must noticeably decrease with an increase in the relative humidity. The value of  $\rho_s$  of organic dielectrics having a greater contact wetting angle, must change less than that of inorganic dielectrics. From the value of the contact wetting angle it can be merely

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said, whether the value of  $\rho_s$  will change, but nothing can be said about the magnitude of this change, as this depends on the presence of water-soluble substances in the dielectric composition. It is established by experiment, that the decrease in  $\rho$  takes place on account of adsorption of water vapor by the surface of a solid dielectric with the result that a polymolecular moisture film forms on the surface of the dielectric. When a gas or vapor comes in contact with a solid matter, either a weak interaction between molecules of the solid matter and gas, or a strong interaction of the type of a chemical reaction can be observed. The first phenomenon is called physical adsorption, and the second chemical sorption or activated adsorption. The value of the contact wetting angle depends on the hardness of the matter. In the table the values of the contact wetting angle (in angular degrees), Moos hardness and  $\rho_s$  of some solid dielectrics at a relative humidity of the surrounding air of 0 and 98% are given. The hardness is determined by the simplest method (Moos scale). The given data confirm the direct relation between the hardness and the contact wetting angle as they both express the magnitude of the surface energy of a solid dielectric. With an increase in the relative humidity,  $\rho_s$  decreases in proportion to the hardness and in inverse proportion

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<sup>19</sup>  
to the contact wetting angle. Glass and mica are exceptions, which is explained by the presence of water-soluble substances in their composition and by the peculiarities in the structure of mica.

Dielectric	Hardness	Contact angle of wetting	$\rho_s$ (Ohm) at humidity	
			0%	98%
Fused quartz	7	27	$1 \cdot 10^{17}$	$6.5 \cdot 10^{10}$
Alkali glass	5-6	29	$3 \cdot 10^{13}$	$5 \cdot 10^8$
Mica	2	30	$2 \cdot 10^{14}$	$5 \cdot 10^9$
Ultra porcelain	4-5	50	$1 \cdot 10^{16}$	$1 \cdot 10^{13}$
Aminoplast	3	65	$6 \cdot 10^{14}$	$3 \cdot 10^{13}$
Polymethylmethacrylate	2-3	73	$5 \cdot 10^{15}$	$1.5 \cdot 10^{15}$
Plastic K-211-34	2,5	86	$7 \cdot 10^{15}$	$7 \cdot 10^{14}$
Polystyrene	2	98	$5 \cdot 10^{17}$	$3 \cdot 10^{15}$
Cable polyethylene	1	106	$2 \cdot 10^{17}$	$10^{15}$

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Surface Resistance

Dielectric	Hardness	Contact angle of wetting	$\rho_s$ (Ohm) at humidity	
			0%	98%
Paraffin	1	105	$6 \cdot 10^{16}$	$2 \cdot 10^{16}$
Fluoroplast-4 <sup>b</sup>	1-2	113	$5 \cdot 10^{17}$	$5 \cdot 10^{17}$

Three references. See also Referativnyy zhurnal, Elektrotehnika, 1956, Nr 92.

A.O.M.

Card 4/4

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VAKSER, N.M., inzh.; U SHUN'-TSZIN', [Wu Shun-chin], inzh.; TOLVINSKAYA,  
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(AMINOPYRINE, related compounds,

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ZAVALISHIN, D.A.,doktor tekhn.nauk, prof.; GLEBOV, I.A.,kand.tekhn.  
nauk, dots.

Synchronous compensators for long-distance power lines.  
Elektrichestvo no.10:43-47 O '58. (MIRA 12:1)

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Vazhnov, Tolvinskaya). 2. Nauchno-issledovatel'skiy institut  
postoyannogo toka (for Gordon). 3. Institut elektromekhaniki  
AN SSSR (for Zavalishin, Glebov).  
(Electric power distribution)

AUTHORS: 1) Vazhnov, A. I., Docent, Candidate of SOV/105-58-10-10/28  
Technical Sciences, Tolvinskaya, Ye. V., Engineer (a woman),  
2) Gordon, I. A., Engineer,  
3) Zavalishin, D. A., Professor, Doctor of Technical Sciences,  
Glebov, I. A., Docent, Candidate of Technical Sciences

TITLE: Synchronous Condensers for Long-Distance Transmission Systems  
(Sinkhronnyye kompensatory dlya dal'nikh elektroperededach)

PERIODICAL: Elektrичество, 1958, Nr 10, pp 43 - 47 (USSR)

ABSTRACT: This is a study of problems of design of synchronous condensers connected with the elimination of self-excitation of such generators in various modes of operation. Inasmuch the investigation of two boundary cases of damper system design is of interest, that is to say, of a normal design and of a connected type of winding, this paper is limited to compensators with salient poles with only one type of rotor. The computations presented in this paper demonstrate that non-compensated supporting condensers, which are intended for continuous duty at rated power with lagging current can be built on

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Synchronous Condensers for Long-Distance Transmission Systems SOV/105-56-10-10/28

the basis of conventional machines with very high power (75 MVA). In order to be able to obtain a considerable output with leading current, the compensator must operate with negative excitation currents. 2) A supporting synchronous condenser which is compensated for capacity can be designed on the basis of normal condensers. 3) Compensated supporting condensers can be continuously operated at rated power with lagging and with leading current. 4) In order to guarantee a forced excitation of non-compensated supporting synchronous condensers an increased ceiling voltage of excitation is required. In compensated condensers a similar behaviour is guaranteed by normal excitors. There are 4 figures, 2 tables, and 5 references, 4 of which are Soviet.

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Synchronous Condensers for Long-Distance Transmission      307/105-38-1c-1c/28  
Systems

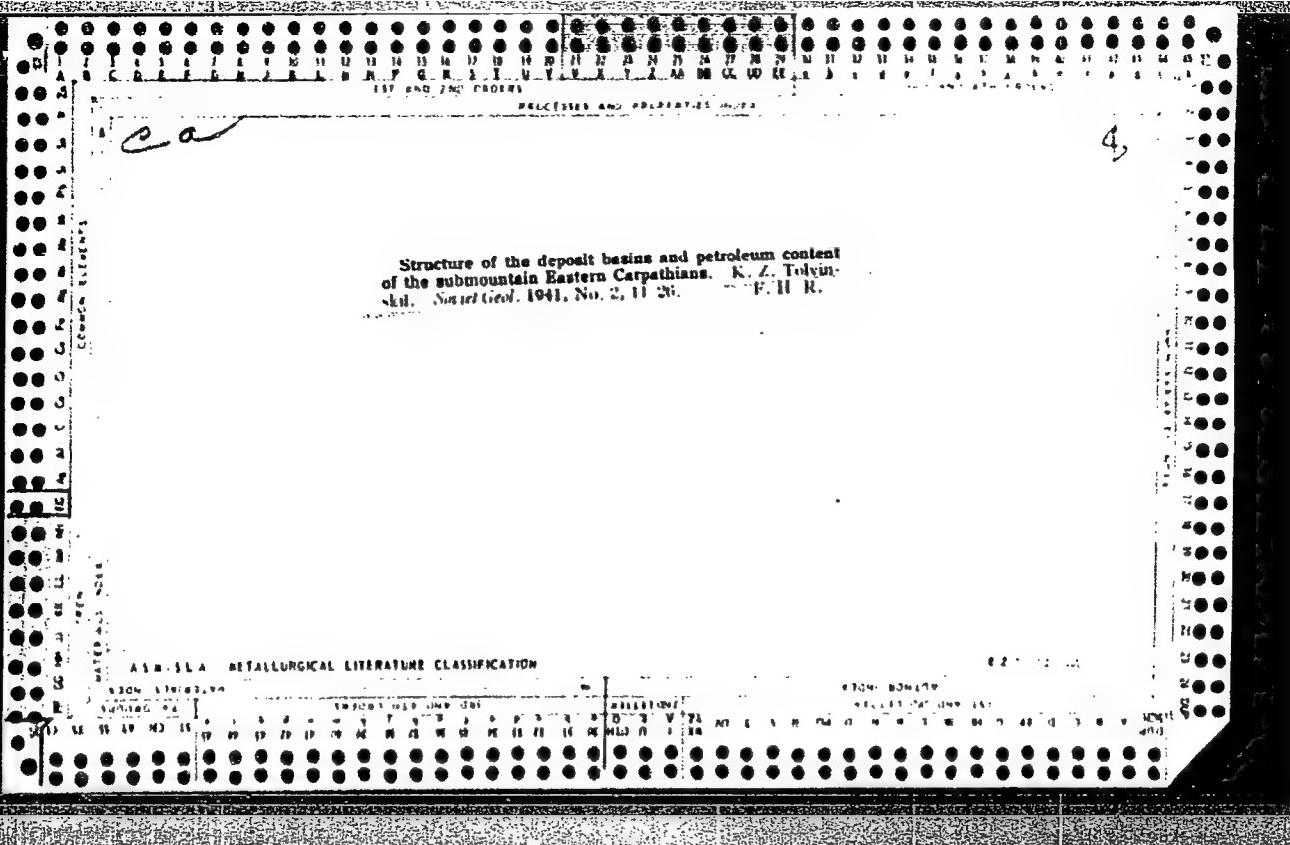
ASSOCIATION: 1) Leningradskiy politekhnicheskiy institut imeni Kalinina  
(Leningrad Polytechnical Institute imeni Kalinin)  
2) Nauchno-issledovatel'skiy institut postoyannogo toka  
(Scientific Research Institute of Direct Current)  
3) Institut elektromekhaniki Akademii nauk SSSR (Institute  
of Electromechanics, AS USSR)

SUBMITTED: May 4, 1958

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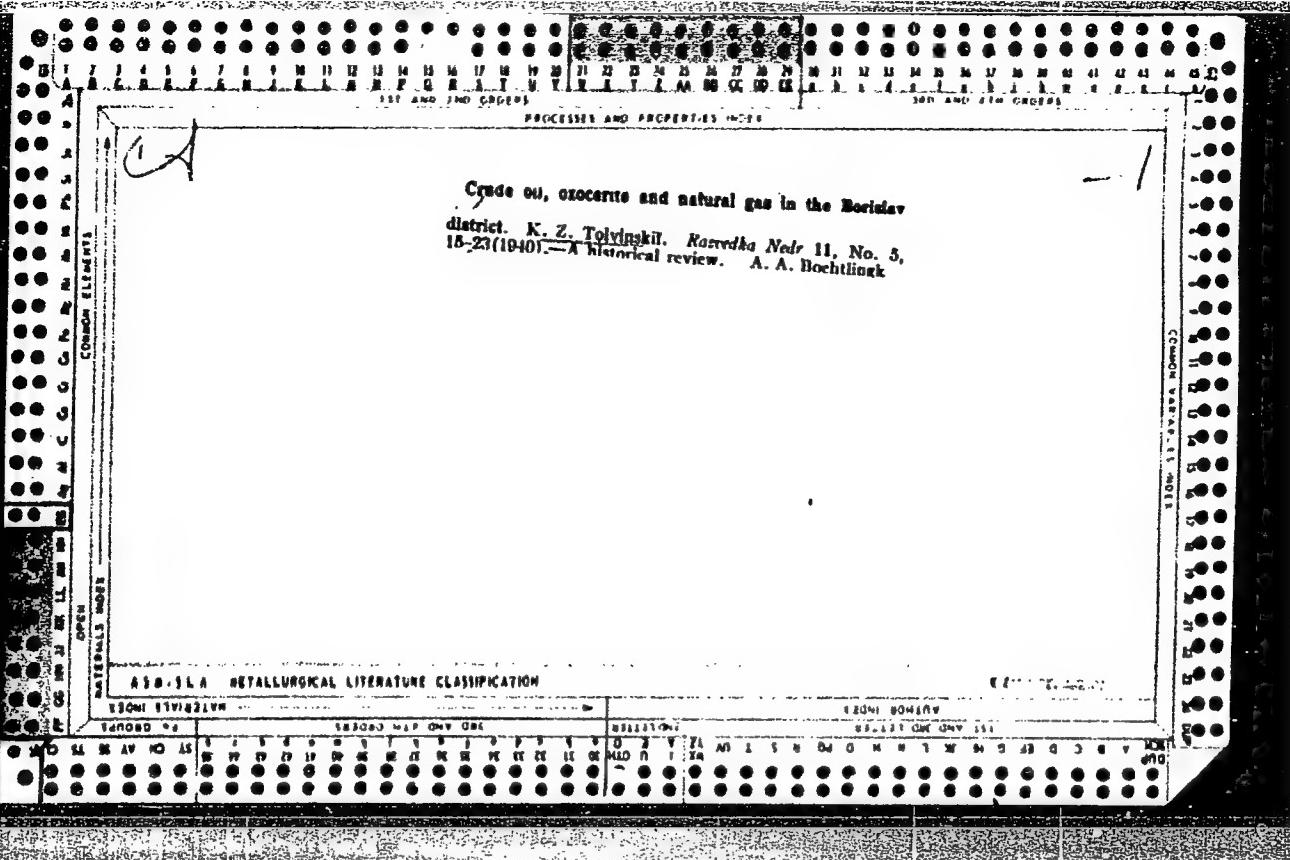
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Zalesskiy, A. M. and Tolvinshiy, V. A. "Forty years of the scientific, lecture, and engineering activity of Professor Aleksander Aleksandrovich Gorev," (The electrical engineer), Trudy Leningr. politekhn. i.-ta im. Kalinina, 1948, No. 3, p. 1-8, (With portrait).

SO: U-3736, 21 May 53, (Letopis 'Zhurnal 'nykh 'statey, No. 18, 1949).

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DECEASED 1958

*Electrical Engineering*

SEE ILC

## USSR/Electricity - Personalities

Jan 52

"Professor N. N. Shchedrin (His 60th Birth-day and 30 Years of Scientific and Pedagogical Activity)," A. A. Gorev, V. A. Tolivinskiy, M. A. Shatelen, R. A. Altarov, N. I. Toperverkh, Kd. F. Fazylov, G. R. Rakimov, M. Ye. Syrkin, B. I. Shababash

"Elektrichestvo" No 1, p 92

Shchedrin has published more than 30 scientific works, most of them devoted to the calculation of short-circuit currents. Recently, he has concentrated on dc power transmission and has

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USSR/Electricity - Personalities  
(Contd)

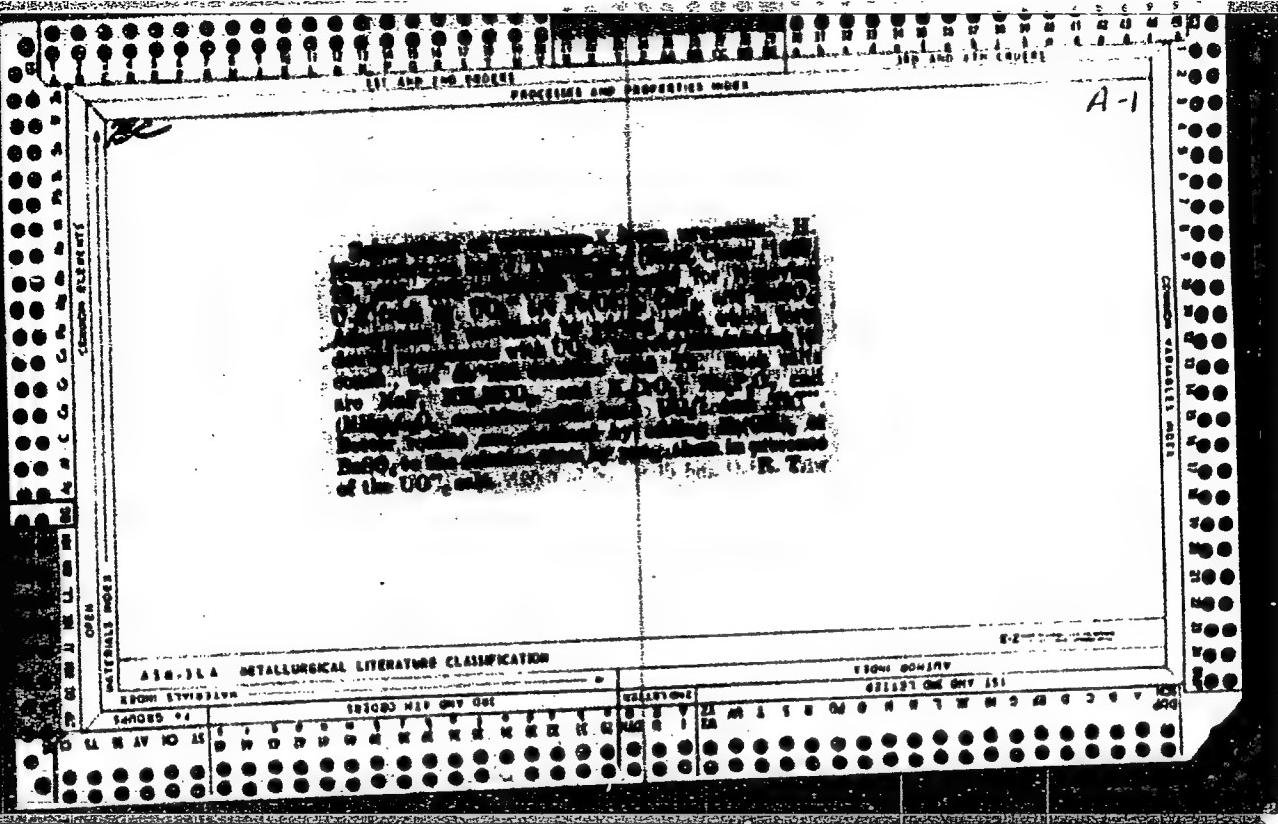
Jan 52

directed studies on long-distance power transmission by dc and ac at the Power Eng Inst, Acad Sci Uzbek SSR. Shchedrin is a member of the Permanent Commission on Short-Circuit Currents, Min of Elec Power Stations, the Commission on Long-Distance Power Transmission, Dept of Tech Sci, Acad Sci USSR, and of the Sci Council of the Sci Res Inst of DC.

*Total - 14 cards*  
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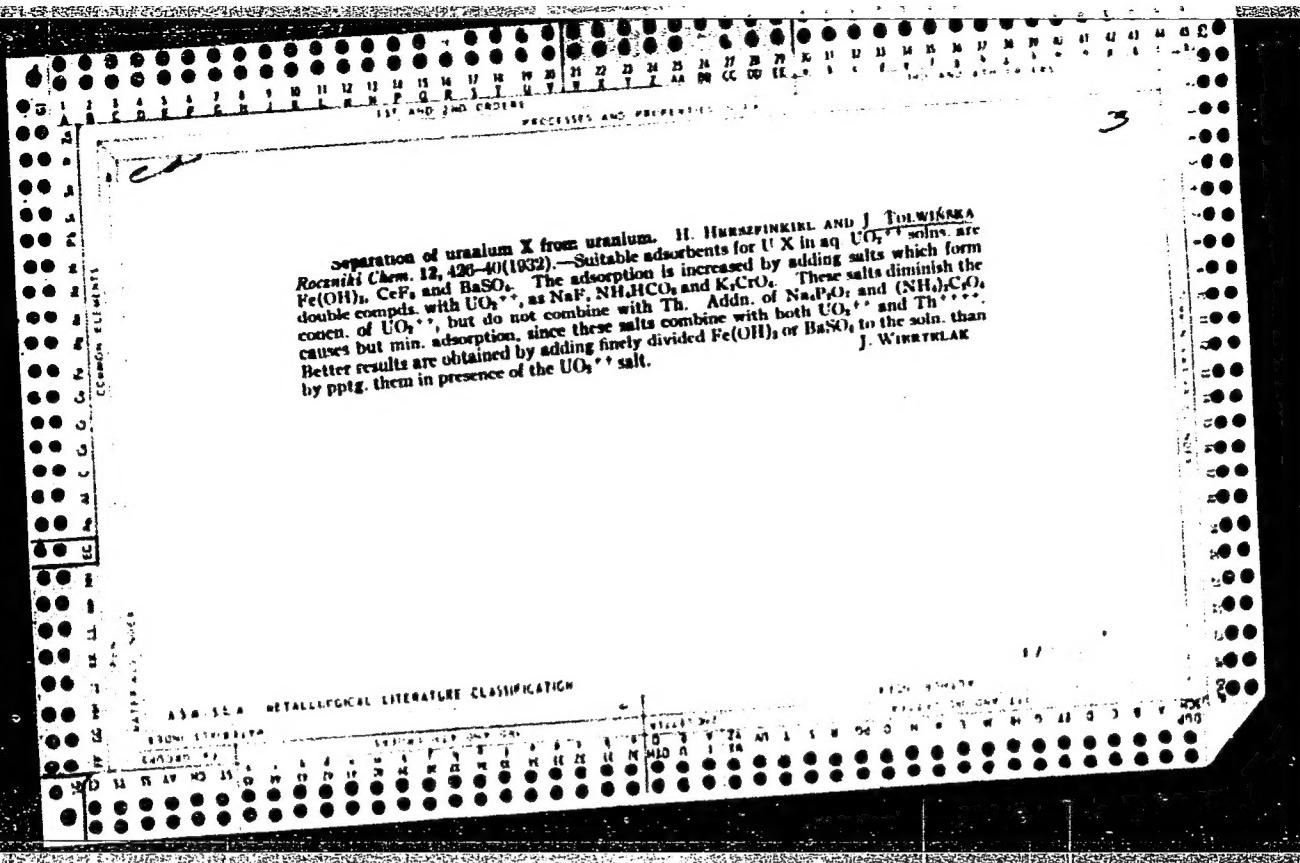
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MALINOWSKI, Zbigniew; SZYMENDERA, Janusz; TOLWINSKI, Jerzy; MALINOWSKA,  
Janina; NOWOSIELSKI, Janusz; MAKOLSKA, Joanna; JASINSKI,  
Wladyslaw

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prof. dr med. W. Jasinski Dyrektor: prof. dr med. W. Jasinski.  
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prof. dr med. W. Jasinski i z Zakladu Fizyki Kierownik: mgr inz.  
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